



## Yam Price Transmission between Taraba and Borno States of Nigeria

\*Sulumbe, I. M., Ghide, A. A. and Abdulazeez, Z.

Department of Agricultural Economics, University of Maiduguri, P.M.B. 1069, Maiduguri,  
Borno State, Nigeria

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### ABSTRACT

The study investigated yam price transmission between Taraba and Borno States of Nigeria. Primary data were collected from 40 randomly selected marketers in Borno and Taraba States. Data were collected on the wholesale and retail prices of yam in both markets and analyzed using descriptive statistics, correlation analysis and multiple regression. Findings show that the yam markets were dominated by educated (90 %) married (85 %) males (80 %) with 55 % having marketing experience of 9-11 years. While the correlation result showed that the two markets were integrated with a coefficient of 0.72. The regression analysis revealed that there were no economies of scale as the coefficients of the marketing functions were positively related to marketing margin. The major problems faced by the marketers were high cost of transportation and inadequate capital. The study recommends that marketers through their associations should seek and obtain agricultural loans to expand their scale of operation and extension agents should encourage the marketers associations to buy transport facilities such as Lorries and trucks so as to cut down transportation cost.

**Key Words:** Yam, Price, Transmission, Taraba, Borno

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### INTRODUCTION

Yam is an important staple food in Nigeria. Its consumption cuts across the whole country as it is consumed by all. It is a primary source of food and income for many households and has high cultural value. In the southern part of the country, it is used at ceremonies and a festival is held annually to celebrate its harvest (Adeniji *et al.*, 2012).

Nigeria is the largest producer in the world accounting for an average of 36.2 million metric tons out of the 51.4 million metric tons produced annually (NEPC, 2008). It is the fifth most widely harvested crop in the country after cassava, maize, sorghum and cowpea (NBS, 2012). Its production is restricted to certain areas as it is only grown in the coastal region or where rainfall is high. Although production is high, the demand for yam is higher as a result of population growth, urbanization and income growth. This has prompted price differentials between producing and non-producing areas.

Price transmission studies are ostensibly empirical exercises testing the predictions of economic theory and providing important insights as to how changes in one market are transmitted to another, thus reflecting the extent of market integration as well as the extent to which markets function efficiently (Rapsomaniski *et al.*, 2004). Taraba State is the second highest yam producing state after Benue with about 2,694,000 metric tonnes in 2006 (NBS, 2007). During the harvest period, there is excess supply of yam which lowers the price in the surplus region while the prices are high in deficit areas like Borno State where yam is not cultivated. Consumers are thus, faced with price differential between one market and another. However, if

the markets are integrated, then price changes in one market are transmitted to the other market and this is reflected by a change in the same direction as the change in the initiating market.

Price transmission studies are undertaken in markets related by commodity flow between the markets. Yam is transported from Taraba State to Borno State with Taraba being the supply market and Borno being the consuming market. This situation has necessitated price transmission analysis between the supply market in Taraba State and consuming market in Borno State so as to measure the effect of prices in one market on prices in the other market. The main objective of the study is to examine yam price transmission between Taraba State and Borno State. Specifically, the study will examine the relationship between the wholesale price of yam in Taraba State and retail price of yam in Borno State, determine whether economies of scale exist in yam marketing and investigate the problems of marketing in the study area.

## METHODOLOGY

The study was carried out in Wukari Local Government Area, Taraba State and Maiduguri Metropolitan Council, Borno State. Wukari is one of the highest yam producing areas in Taraba. It is located in the southern part of Taraba between latitudes  $7^{\circ} 51'$  and  $7^{\circ} 85'$  N and longitudes  $9^{\circ} 47'$  and  $9^{\circ} 78'$  E. It has a land mass of about 4,308 km<sup>2</sup> with a population of 241,546 people (NPC, 2006). The main occupations of the people are farming, trading and civil service (Taraba State Ministry of Information, Culture and Tourism, 2010). Commercial yam production and marketing are largely carried out in the area. Maiduguri the capital of Borno State, Nigeria lies between latitudes  $11^{\circ}$  and  $14^{\circ}$ N and longitudes  $10^{\circ}$  and  $14^{\circ}$ E. It has a land mass of 50,778 square kilometers (Ministry of Land and Survey, 2008). According to 2006 census, Maiduguri has a population of 521,492 people (NPC, 2006). Its economy is largely based on Agriculture, trade and civil service with maize, millet, groundnuts and cowpea as the major crops grown (Borno State Diary, 2012). Yam is largely traded in Maiduguri as it is highly consumed. Most of the yam traded in Borno State comes in from Taraba State because of locational advantages in cost of transportation and ease of movement.

### Sampling procedure, sample size and data collection

Random sampling technique was used to select respondents for the study. Twenty (20) yam wholesalers from Wukari main yam market and twenty (20) retailers from Maiduguri yam market were randomly selected from sampling frames to give a total of forty (40) respondents. The sampling frames were obtained from yam marketers' associations in the two states. The study used primary data obtained through structured questionnaires which were administered to the marketers weekly for a period of three months (from June to August 2014). A total of twelve (12) weeks data were used for the analysis.

### Analytical techniques

Descriptive statistical tools such as frequencies and percentages were used to describe the socio-economic characteristics of the marketers and investigate the problems of marketing in the study areas. Price correlation was used to know the level of integration between Taraba State and Borno State. It is expressed as:

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2} \sqrt{n\sum y^2 - (\sum y)^2}}$$

Where:

r = correlation coefficient

x = wholesale price of yam in Taraba State

y = retail price of yam in Borno State

n = number of weeks

Multiple regression analysis was used to examine the influence of average marketing cost on marketing margin in determining economies of scale. This is expressed as:  $Y = f(X_1, X_2, X_3, X_4)$ , Where:

Y= Marketing margin (₦)

X<sub>1</sub>=Transportation cost (₦)

X<sub>2</sub>=Storage cost (₦)

X<sub>3</sub>= Commission agents fee (₦)

X<sub>4</sub>=Loading and off-loading cost (₦)

A negative relationship between the coefficients of the marketing functions and the marketing margin indicates the existence of economies of scale i.e. as more margin is realized from the sales (as a result of handling more of the commodity), the cost of performing the marketing function decreases.

## RESULTS AND DISCUSSION

### Socio-economic characteristics of yam marketers

The Socio-economic characteristics of the respondents examined include; sex, age, marital status, educational level, years of marketing experience and source of capital. Table 1 presents the socio-economic characteristics of the people involved in yam marketing in the study area. Gender is important in agricultural marketing because some marketing functions are best performed by males compared to females. Table 1 reveals that majority (80%) of the respondents were males. This means that men dominate the marketing of yam in the study area. This could not be unconnected with the strenuous efforts required in yam marketing.

**Table 1: Socio-economic characteristics of the respondents (n=40)**

Socio-economic Variable	Frequency	Percentage (%)	Mean
<b>Sex</b>			
Male	32	80	
Female	8	2	
<b>Age(years)</b>			
21 -30	10	25	
31 -40	20	50	37
41- 50	8	20	
>50	2	5	
<b>Yrs of Form. Educ. (yrs)</b>			
No formal Education	4	10	
1 – 6	10	25	10
7 – 13	24	60	
Above 13	2	5	
<b>Years of Mark. Exper.</b>			
1 - 5	10	25	
6 – 10	22	55	
11 – 15	4	10	8
> 15	4	10	
<b>Marital Status</b>			
Single	14	35	
Married	26	65	

Source: Field Survey Data, 2014

The age of yam marketers affect marketing efficiency as young marketers can perform more marketing functions within a given time period compared to older marketers. Table 1 shows that 50 % of the respondents were within the age-group of 31-40 years, 25% were aged below 30 years of age, 20% were in the age-group of 41-50 years, and 5% were aged above 50 years.

The mean age of the respondents was 37 years. The implication of this is that majority of the marketers were in their active years and are, therefore, capable of carrying out their marketing activities efficiently. The result agrees with the findings of Adeniji *et al.* (2012) which reported 76.7% of yam marketers in Niger State were between the age- groups of 31-50 year.

Marital status can be an indication of the family responsibilities an individual shoulders. Yam marketers were therefore, asked about their marital status. Table 1 indicated that most (65%) of the respondents were married. The implication of this is that the marketers are likely to carry-out the marketing activities with all the seriousness it deserves because of the need to meet their family responsibilities.

Table 1 further revealed that 60% of the respondents had 7-13 years of education, 25% had 1-6 years of education and 5% spent more than 13 years in pursuit of education with a mean of 10 years. Only 10% of the respondents had Quranic education. This implies that majority of the respondents were educated and this account for why the marketers have been able to manage their finances since education enhances an individual's capacity to understand, manage and work with new technology (Ewuola and Ajibetun, 2000).

Regarding marketing experience, 55% of the respondents had 6-10 years of experience, 25% had 1-5 years of experience, 10% had 11-15 years of experience and another 10% of the respondents had over 15 years marketing experience with a mean of 8 years marketing experience (Table 1). The implication is that majority of the yam marketers are experienced in trade, a knowledge which will enable the marketers understand the intricacies of the trade and thus know how to cut down on marketing cost in order to maximize profit.

#### **Yam price transmission between Taraba and Borno States**

The calculated correlation coefficient between wholesale price of yam in Taraba State and retail price of yam in Borno State is presented below:

$$r = \frac{13084728 - 13014430}{\sqrt{69356}\sqrt{134099}} \\ = 70298/96439 = 0.72$$

The result revealed that there exist a high integration with correlation coefficient of  $r = 0.72$  indicating a strong linear relationship. This means that prices in both markets move together. Increase in the price of yam in Taraba will result to increase in price of yam in Borno and vice versa. The result implies that any increase or decrease in price of the wholesale sector is efficiently transmitted to the retail sector of the yam markets.

#### **Determining economies of scale in yam marketing**

The result of the multiple regression analysis (see Table 2) to determine economies of scale showed the  $R^2$  as 0.83 which means that the independent variables explained about 83% of the variations in the margin. The signs of the coefficients of all the included independent variables were positive contrary to *a priori* expectations. The meaning of the positive signs is that as the costs of performing the marketing functions increase, the marketing margin also increases. The implication of this is that yam marketers do not enjoy any form of advantage in cost reduction due to increase in the volume of transaction. Any increase in the margin the marketers realize from their marketing activities can, therefore be ascribed to the increase in the turn-over and not as a result of reduced costs of performing the marketing functions.

**Table 2: Influence of marketing costs on marketing margin**

Variables	Coefficients	Standard Error	t-value
X <sub>1</sub>	0.0222	0.0089	2.50**
X <sub>2</sub>	0.2966	0.1399	2.12**
X <sub>3</sub>	0.1767	0.0648	2.73***
X <sub>4</sub>	1.3010	0.2040	6.38***
Constant	1.4145	0.7010	2.02**
R <sup>2</sup>	0.83		

Source: Field Survey Data, 2014,

Note: \*\* and \*\*\* are levels of significance at 5% and 1% respectively.

### Problems of yam marketing

Marketing activities in developing countries are generally faced with myriad of problems which affect the efficiency with which they are performed. For this reason, yam marketers in Taraba and Borno States were asked about the problems they consider most severe in their activities and the results are presented in Table 3. High transportation cost (32.5%) and insufficient capital (32.5%) were the major problems faced by the respondents. Transportation cost affects yam marketing in that, marketers revealed that they sometimes have to pay two-three times the cost of purchase of a given quantity of yam for it to be conveyed from Taraba State to Borno State. The resultant effect of this is an exorbitantly high retail price of yam in the receiving market (Borno). This affects the rate of turn-over as consumers will reduce the quantity they purchase due to high price of the commodity. With capital being in-sufficient, marketers can only afford to purchase a limited quantity of yam to be taken to Borno State for marketing. Moreover, as capital is not enough, they are not in a position to own their own transport facilities which has the advantage of lowering the transportation cost. These findings are in line with that of Hamiduet *al.* (2014) who observed that insufficient capital and high cost of transportation were the major problems in yam marketing in Gombe State. Other problems faced by the marketers include pest infestation (25.0 %), breakage of yam (5.0%) and inadequate storage facilities (5.0%).

**Table 3: Problems of yam marketing**

Problems	Frequency	Percentage	Rank
Transportation cost	13	32.5	1
Pests infestation	10	25.0	2
Breakage of yam	2	5.0	3
Poor and inadequate storage facilities	2	5.0	3
Insufficient capital	13	32.5	1
Total	40	100.0	

Source: Field Survey data, 2014

### CONCLUSION AND RECOMMENDATIONS

The study revealed that the two markets were integrated with a correlation coefficient of 0.72 implying that yam prices are adequately transmitted between the two states. Furthermore, the result indicated that there were no economies of scale as the coefficients of the marketing functions were positively related to marketing margin. The problems faced by the marketers were high cost of transportation, inadequate capital, pests' infestation, breakage of yam and inadequate storage facilities.

Based on the findings of the study, the following were recommended:

Extension agents should encourage the marketers associations to buy their own transport facilities such as Lorries and trucks so as to cut down transportation cost. Marketers should through their associations seek and obtain agricultural loans which come at low interest rates to expand their scale of operation.

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